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Issues in developing an internet course for family-centered practice in early intervention

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Teachers and administrators interested in special education topics are seeking educational opportunities for professional development in order to better meet the needs of students, but face obstacles such as time and distance in attending face-to-face instruction. Distance delivery and more specifically offering courses online, is a very viable option to meet these needs. This article presents data from a study evaluating the effectiveness of on online course for family-centred practice in early intervention. Although overall feedback from students was favourable, some individuals struggled with technology issues and keeping up with e-mail correspondence. Issues encountered by the instructor are discussed, such as late submissions of assignments, and recommendations for enhancing online course delivery are presented.

Universities are facing two dilemmas in meeting the needs of students seeking post-secondary educational opportunities. First, many students experience obstacles that prevent them from accessing on-campus face-to-face instruction. Barriers involving time, place, and personal situations are creating the need for course work that is flexible and accessible off-campus. For these students, the "one-test/one-delivery-mode-fits-all" approach is becoming less desirable (Academic Technologies for Learning, 1999; West, 1999). Second, the realization that students cannot learn all there is to learn in a given field in a 4-year degree program creates the desire for life-long learning opportunities (Academic Technologies for Learning, 1999; Beller & Ehud, 1998; Robinson, Brewer, & Erickson, 1999). Special education teachers and administrators desire life-long learning experiences in order to better meet the needs of their

students and life-long learning is a goal of ministries of education (Government of Alberta, 2006a).

In order to resolve these dilemmas, institutions are implementing a variety of courses involving distance learning and/or technology-enhanced courses. These courses are blurring the boundaries between campus delivery, open learning systems, and distance education. Universities are adopting the term "distributed education" to describe courses where technology is being used to customize learning environments to meet the diverse needs of their students (Academic Technologies for Learning, 1999). One form of distributed education involves students as online learners. Goodyear, Salmon, Spector, Steeples, and Tickner (2001) defined online teaching and learning as "teaching and learning that takes place over a computer network of some kind… and in which interaction between people is an important form of support for the learning process" (p. 68).

This paper describes the creation of an online undergraduate/graduate level course in Early Intervention. The course was offered as an undergraduate or graduate, 3-credit course. The Internet was chosen as a format for instruction because it reduced barriers such as time, place, and personal situations that many of the projected students would face. It was also hoped that course participation would develop an online community of learners (Russell, 1999). Following a discussion of the state of the art in online course delivery, findings regarding student satisfaction with the online early intervention course will be presented. This will be followed by further recommendations for successful online course delivery.

Issues for Developing Online Courses

The design and implementation of Internet-based courses is an ongoing and time-consuming process. It involves more than the simple conversion of traditional course material into hypertext markup language (html) and posting these materials on the Internet. Instructors must first consider the appropriateness of their course materials for the

Internet, the role of an online instructor, various design guidelines, and the impact of online courses on learners.

Decision making process. As a first step in the process, instructors need to consider whether or not their course materials are suited for an online learning environment. Judging the appropriateness of the content for the Web can be facilitated by identifying the target audience, identifying course goals and objectives, and identifying assessment procedures (Miltiadou & McIsaac, 2000). Examining exemplary online courses already being offered by various institutions and web course templates provided by distance learning departments will also assist instructors in the decision making process.

Many instructors begin the process of transferring course materials online by first supplementing their face-to-face courses with online course outlines, course readings, lectures notes, and tutorials (Maddux, 1999). Maddux found that, although initially time-consuming, placing supplementary materials online has many benefits, such as no longer having to deal with students who miss lectures or lose handouts. More importantly, student performance improved over time as students were able to devote more class time to listening as opposed to note taking and performance was enhanced by tutorials and class notes available to read at their leisure and on repeated occasions if necessary.

Roles of the online instructor. The next step in designing online courses is to determine which roles an instructor will be able to fulfill and where supports are needed. Goodyear et al. (2001) identified eight roles: process facilitator, advisor-counsellor, assessor, researcher, content facilitator, technologist, designer, and manager-administrator.

Processor facilitators welcome students, establish ground rules, create community (e.g., provide positive feedback), manage communication, and model social behaviour. Advisor-counsellors work with students on an individual basis and encourage them to get the most out of their interactions with the course. Assessors assign grades and provide feedback, while researchers are responsible for keeping abreast of new information related to the content of the course. Content facilitators

enhance the students' understanding of course content and technologists are responsible for being knowledgeable of technological advances and incorporating new technologies where appropriate. Designers help design worthwhile learning tasks and, finally, manager-administrators oversee registration, security, and record keeping. The importance of each role to an online learning situation will vary depending on characteristics of each course. Instructors need to determine if they have the skills necessary to implement each role and, if not, identify necessary supports (Goodyear et al., 2001).

Design guidelines. After determining if they have the skills and resources necessary to develop an online course, instructors need to consider various design guidelines and strategies for online courses. During the development phase, several esthetic design guidelines should be considered. For example, Collis and Winnips (1998) suggest placing navigation buttons on the same location on the screen, choosing appropriate backgrounds and text with good contrast, ensuring a print option is available, and incorporating menus that have at least four or five links. Miltiadou and McIsaac (2000) suggest using an appropriate font style that is universal for PC and Macintosh computers, placing text and images consistently on each Web page, including a site map for easy access to all Web pages, and choosing subtle colours that complement the content.

There are also several design guidelines that ensure students are engaged and actively participating in the learning process. Miltiadou and McIsaac (2000) suggest enhancing the relevance of the course content by incorporating case studies presented by either instructor or students that approximate real-life situations. Winfield, Mealy, and Scheibel (1998) concur and suggest choosing activities that build user confidence with technology. Examples included having students submit a simple activity (e.g., introducing themselves to the group) before attempting a more difficult task and building in the instructor's presence by having instructors post weekly announcements, modelling an informal style of communication during e-mail correspondence.

Impact on online learners. In addition to design considerations, instructors need to be aware of the impact of online learning on students. Research has documented feelings of distress and isolation by students participating in distance and/or online courses (Hara & Kling, 2001; Hutton, 1999; Vrasidas & Stock McIsaac, 1999). Interaction is a key component in a learning experience and distance from campus, plus feelings of isolation can affect the number of interactions in a course (Hara & Kling, 2001; Morrison & Adcock, 1999). Number of interactions is one of the most significant factors that contribute to a course's success or failure (Rovai & Barnum, 2003). The absence of interaction can prevent a student from succeeding with a course and may even cause a student to withdraw (Miltiadou & McIsaac, 2000).

Creating a sense of community can reduce students' feelings of isolation. Palloff and Pratt (1999) and Buckingham (2003) highlight the importance of creating learning communities and how this can be facilitated in an online learning environment. In a learning community, individuals learn from each other and work collaboratively to achieve a common goal. Students may feel a greater sense of community in online learning environments since cliques that exist in face-to-face classes may not exist in online classes (Buckingham, 2003).

Harrison and Bergen (2000) recommend personal profiles that provide students with the opportunity to identify other students with similar experiences or career aspirations. Private messages of support and public postings by the instructor also contribute to the development of the sense of community (Hutton, 1999). Web boards are a way to develop community, providing threaded discussions and enabling students to share information in an organized, central location on the Internet without having to send messages through their own personal e-mail systems (AKIVA Corporation, 2000). Furthermore, allocating a certain percentage of each student's grade to online discussion encourages student participation, fosters a community of learners, and increases interactions. Harrison and Bergen recommend allocating 20 percent of the student's mark to online participation.

Assigning marks for participation can also help to prevent student procrastination. During Internet courses, where students do not have the face-to-face contact or verbal reminders regarding assignments, procrastination tends to be exaggerated (Lamb & Smith, 1999). Tracking assignments, frequent feedback, and weekly reminders regarding readings are imperative for all students.

Structured assignments, required interactions, and immediate feedback can also increase participation during online courses. Often dialogue and interaction do not occur unless "topics" for discussions are pre-scheduled; thus, the scheduling of structured required activities or assignments can lead to more interaction and increased dialogue (Vrasidas & Stock McIssac, 1999). Listserves and e-mail have been identified as viable systems for graduate seminars (Morrison & Adcock, 1999). However, students and instructors can feel overwhelmed by the number of messages when using e-mail or listserves for class discussions. Morrison and Adcock (1999) advise using controls to limit discussions to manageable time frames (e.g., scheduling online chats).

Despite the best planning efforts, problems will undoubtedly occur during online courses. In any context where there is reliance on instructional technology, the threat of malfunction and consequent access to resources for course requirements is constantly present (Johnson & Howell, 2004; Saito, 2002). Smith and Bencoster (1999) caution that instructors should expect hardware malfunctions, server connection problems, and software conflicts. Technical problems can also be augmented by students who use different platforms (e.g., PC versus Macintosh) or have their browsers set to different preferences. Although malfunctions are unavoidable, every attempt should be made to minimize technical difficulties since these have been found to decrease student motivation (Johnson & Howell, 2004).

The above discussion presented several concerns and suggestions regarding online course delivery. Online courses have been developed and evaluated in many disciplines including nursing (Buckingham, 2003), education (Rovai & Barnum, 2003), and leadership (Rovai & Barnum, 2003). With regard to early intervention, Ludlow (2002)

reported on a web based staff development initiative for early intervention personnel but, to date, no other online early intervention undergraduate or graduate courses have been evaluated in the literature. The following investigation will thus describe the development of an online early intervention course and present results in student satisfaction.

Methodology

Participants

Students in the first three offerings of an undergraduate/graduate level Early Intervention course (described below) participated in the survey. Twelve female students made up the first course offering. The primary authors of the three manuals were instructors during the first offering. The research coordinator, who transformed the manuals to html, acted as the technical assistant. Course instructors solicited students from early intervention agencies. Students were given financial assistance with their tuition to help offset the cost of obtaining Internet hookup. It is important to note that in 1997 all students had to obtain Internet hookup in order to participate in the course; however, in 1999, 90% of the students had Internet hookup prior to course.

Students for the second and third offerings of the course were recruited in the same manner as other courses offered by the University department (i.e., they were not recruited from agencies or given financial assistance). During the second offering, the research coordinator served as co-instructor with another graduate student, and the initial instructors continued as mentors. Sixteen students (1 male and 15 female) registered for the course, with one student withdrawing from the course. During the third offering, the research coordinator was the sole instructor. Ten female students registered for the course, one student withdrew from the course.

Course Development

Acknowledging the difficulties experienced by instructors and students with Internet courses, a combined graduate and undergraduate course was developed to promote family-centered practice in early intervention with young children with developmental disabilities and their families. Family-centered intervention recognizes that the family as a system is more than the sum of its parts and that the family system exists within a larger social and environmental context (Begun, 1996). Further, family-centered intervention recognizes the importance of both formal and informal support systems, the costs and benefits of intervention, and the "goodness of fit" of interventions (Begun, 1996).

Course materials included 8 self-study modules focusing on family-centered practice and the assessment of family strengths and needs (Kysela, McDonald, Drummond, & Alexander, 1996); natural teaching strategies (McDonald, Alexander, Kysela, & Drummond, 1996); and family problem solving (Drummond, Kysela, McDonald, Alexander, & Shank, 1996). These three manuals were converted to Hypertext Markup Language (html) using Microsoft Office, Adobe Pagemill, and Adobe Photoshop. Students went through each module on their own and then presented their assignments to the other class members.

Students participated in the course through the Internet and an automated mailing list management program called Majordomo. During the third course offering, the WebBoard, a Web-based conferencing system, replaced Majordomo. The WebBoard provided threaded discussions and allowed students to share without having to send messages through their own e-mail systems (AKIVA Corporation, 2000). This was a very interactive medium as online conferences were set up that featured topics outlined in the course syllabus. The instructor checked and commented on questions and comments every 48 hours at a minimum.

Course Requirements

During the course, students developed the skills to utilize family-centered approaches with parents and children. Skills were exhibited through case study application and work with families who were not clients or recipients of any services from the course participant. If the student had worked with families of children with special needs in the past, they could select a family who had a child under the age of 5 years identified as having special needs. If the student was new to the field, it was recommended that he/she work with a family who had a typically developing child.

All students were required to participate in online discussion on a regular basis. A copy of the course outline was available several weeks in advance of the course start date. Although the course was provided in its entirety over the Internet, all rules governed by other University courses still applied. There were no textbooks required for this course; all course materials were available online. Students were also required to have access to electronic mail as well as the Internet. All students required user identification and passwords. In addition, students were instructed to use fictitious names or family initials when referring to their families in group discussions and course assignments.

Students were expected to submit assignments based on their work with families approximately every 2 weeks. Their assignments were posted on the Internet at individual feedback pages assigned to each student. During the first offering, students were provided a Uniform Resource Locator (URL) where their assignments, feedback comments, and grades would be located. During the second and third course offerings, students were also provided with user names and passwords in order to access their feedback page. The Gate Keeper, a Javascript protection device of low security, was used to assign user identification and passwords to limit access to the feedback menu (Barta, 2000). All assignments were posted at a feedback menu with comments within 5 days of being received.

Measures of Online Course Effectiveness and Student Satisfaction

The process of developing and implementing the course was documented so that any lessons learned could be of use to other instructors developing courseware. In addition, a survey was distributed to course participants to determine if the students perceived online instruction as an effective method of course delivery. The survey included 44 questions covering personal satisfaction with the course, design and navigation of the course, medium of instruction, and course content. Students rated each question on a five-point Likert scale (Tuckman, 1994) and space was provided for students to elaborate on the strengths and weaknesses of the course and any additional comments.

Consent to participate in the research study was received from all course participants. After reading an online research protocol, students indicated their willingness to participate in the research by clicking on an *agree* button, indicating consent to all forms of electronic communication and exchange, including e-mail, newsgroup, conferencing, and assignments to be recorded and used for research purposes. Students could withdraw their consent at any time by contacting the course instructor.

Results

Student Demographics

Eighteen students (47%; 1 male, 17 females) submitted the online survey. Seven students participated in the first offering, nine in the second, and two in the third. Eight students were 40 years of age or older, seven were between 30 and 40 years of age, and three were between 18 and 29 years of age. Ten students were graduate students and eight were undergraduate students.

Computer Experience

Seven students (39%) had over 5 years of experience in working with computers, eight students (44%) had 1-5 years of experience, and three

students (17%) had been working on computers for less than 1 year. For 12 of the 18 students (67%), navigating the Internet was a relatively new experience, three students (17%) had 6 months to a year of experience, and three students (17%) had more than one year of Internet experience. E-mail was also a relatively new experience for most students. Ten students (56%) had less that 6 months experience, 2 students (11%) had been using e-mail for 6 months to a year, and 6 students (33%) had more than 1 year of experience. For all students, this was their first experience in using either the Majordomo listserv or the WebBoard as a conferencing system.

Satisfaction with the Course

Six students (33%) agreed that they felt some degree of frustration while taking the course. Three of these respondents were part of the first offering and were without off campus Internet access for the majority of the course. Four of the six respondents had less than 6 months experience working on the Internet or with an electronic mail system and struggled with the process. All other responses regarding course satisfaction were positive. Sixteen students (88%) reported feeling favourable towards the course content (13 strongly agreed, 3 agreed) and were satisfied with what they had learned while taking the course (10 strongly agreed, 6 agreed). Seventeen students (94%) felt the course objectives were clear, 12 students (67%) agreed that the workload was appropriate, and 17 students (94%) felt challenged to do their best work. Likewise, all students stated that they would recommend this course to other students.

Medium of Instruction

Despite the number of novice computer users in the course, only one student from the second course offering felt that he/she was more involved in operating the computer than understanding course content. Ten students (55%) felt as if they had a private tutor and 15 students (83%) felt as if they were engaged in conversation with the instructor or other students. Moreover, most students (83%) disagreed when asked if they would rather have taken the course in a traditional classroom

setting. One student commented that "classmates seemed to talk more than in some classroom situations," and four students felt that the "feedback on assignments seemed faster than the lecture method."

Course Content

Feedback regarding the course content was favourable. Most students indicated that they enjoyed putting "theory into practice" while working with their families. Many students commented on the "practical nature of the course." Also, 17 students (94%) indicated that they would apply principles learned from the course to future situations. All modules within the course were rated as useful by the respondents, with Development of an Individual Family Plan receiving the highest percentage of agreement (94%) and Resiliency and Family Adaptation receiving the lowest percentage of agreement (78%).

Discussion and Recommendations

Although responses from the survey were positive, problems often associated with distance education surfaced during the course offerings. For example, some students struggled with learning the technology as well as the course content and some students experienced difficulty keeping up with e-mail correspondence and course assignments. Assignments were submitted late and many students required extensions in order to meet the requirements for the course. Finally, participation in online discussions was low for many students. The following is a discussion of these issues and recommendations for online course developers.

Technological Problems

As Smith and Bencoster (1999) predicted, students in all offerings experienced difficulties with computing technology. Although it was stipulated that access to the Internet and e-mail was a prerequisite for this course, five of the 12 students in the first offering started the course without having such access. During phone calls and e-mail correspondence, these students reported a very slow and frustrating start

to the course. Also, difficulty obtaining reliable Internet access occurred during the first and the second offerings. The majority of students enrolled in the first year were using the University student pool for online access. Because of the high number of students using this system, many students had to wait until low-traffic hours (i.e., after 10:00 p.m. or prior to 8:00 a.m.) in order to access their accounts. However, during the second and third offerings, most students were using their own Internet service provider and access to the Internet was not an issue.

During the second offering, students who were having difficulty were identified early in the term and weekly phone calls were made to encourage these students. During the third offering, attempts were made to identify students experiencing technical difficulty prior to the course commencement, by requiring students to submit an electronic form to the instructor before the first day of class. This online form included a checklist of activities for the student to complete (e.g., introduce self on the WebBoard). The form was a simple activity and completion of the activities within the form would enhance the student's confidence with technology (Miltiadou & McIsaac, 2000), plus missing or incomplete forms alerted the instructor to students who needed technical support. The use of the online form speaks to recommendations that, in order to offset some of the problems associated with distributed education, students should participate in an Internet tutorial prior to or during the first week of classes (Hutton, 1999; Smith & Bencoster, 1999). Participation in an Internet tutorial enables students to focus on course content rather than technological process and provides instructors with the opportunity to identify students who are experiencing technical problems early in the course. Providing early feedback to students who are experiencing frustration with technology reduces attrition (Miltiadou & McIsaac, 2000) and responding quickly to technical problems is imperative because technical malfunctions may lead to decreases in student motivation (Johnson & Howell, 2004).

Assignments

Six students in the first offering were dissatisfied with the amount of work assigned during the course, deeming it excessive. Feedback from

these students contributed to the overall lower percentage of personal satisfaction with the course. As a result of this feedback, the course requirements were changed in subsequent offerings, but students taking the second offering continued to find the workload heavy. The workload assigned to the course was again reduced. During e-mail discussions in the third course offering, no negative feedback was received regarding the course workload. It is unknown if the dissatisfaction with workload was due to the increased time spent in online discussion or if the course requirements were too high. As discussed by Morrison and Adcock (1999), students may feel overwhelmed with the number of messages when using e-mail or listservs, an issue that will be discussed later in this paper.

Procrastination

Because of the lack of face-to-face contact and verbal interaction with course instructors, some procrastination with assignments was expected (Lamb & Smith, 1999). However, the degree of procrastination that took place during this course was not anticipated. Initially, the student and volunteer family were allowed to proceed through the materials at a pace that was comfortable for both. It was hoped that this self-paced learning approach would encourage the students to take responsibility for their learning in a manner that is not possible in a typical lecture-based course (Academic Technologies for Learning, 1999). Students were granted flexibility with submission of assignments. However, under these conditions students were not interacting with each other in the course and many of the course objectives were not being met. All but one student in the first offering required an extension to complete the course. Once extensions were granted, it was decided to provide specific timelines for task completion. In the second offering, guidelines were given for the submission of assignments at the onset of the course. As a result, only three students required extensions. Therefore, although the philosophy of an online course is interpreted by many to mean "complete the course at times convenient to the user," most students in this course required fairly specific guidelines in order to meet course requirements. A happy medium needs to be established between the

flexibility of Internet courses and incentives/guidelines to help motivate students.

Participation in Discussion Groups

During the first offering, Listserv participation was low. The average number of messages from students to the Listserv was seven messages per student (range 1-20) over a 3 month period. After 6 weeks, the instructor was more familiar with the online learning process and was able to select assignments that ensured students were actively participating in the learning process (Johnson & Howell, 2004; Miltiadou & McIsaac, 2000; Winfield et al., 1998). The instructor also allocated 27% of the student's mark toward online participation. With these changes in place for the second offering, student involvement increased to an average of 12 messages per student over a 3-month period (range 3 to 29).

During the third offering, the WebBoard was used as a conferencing system. By providing a place for students to introduce themselves and meet with other students, the "sense of community" among students was enhanced (Harrison & Bergen, 2000; Hutton, 1999). Conferences were set up on the WebBoard, featuring topics outlined in the course syllabus. A "coffee shop" was also set up for students to "chat" about any topic of interest, and students had the option of "talking" to each other simultaneously. With the change in conferencing system and previous changes in assignments, interactions among students increased to an average of 21 messages over a 3-month period, not including the frequency of messages during "chat sessions" or messages between students in the "coffee shop."

Although the increase in student interaction was a welcome change, many students commented that "they found it overwhelming trying to catch up with messages." During the last "chat" of the course, the students and the instructor agreed that specific timelines for discussion would have been helpful. For example, many thought that it would have been better if user guidelines were in place to limit signing on and that no one should post more than 10 messages per week.

Roles of the Online Instructor

The number of roles required of an online instructor will vary depending on the nature of the course (Goodyear et al., 2001). However, all six roles identified by Goodyear et al. were implemented to varying degrees throughout the course and the challenge was in balancing these roles. When weekly assignments were being submitted, traffic to the instructor's e-mail increased substantially and the instructor felt overwhelmed in trying to balance the roles as process facilitator and assessor. Also, when two or more students experienced difficulty with assignments or technical problems, the amount of one-on-one advising took precedence over other roles. During intensive advising times, roles as content facilitator and processor facilitator suffered. More research is needed in order to track the amount of time instructors spend in their various roles and to determine if the availability of supports (e.g., technical support persons) is fiscally viable. Ali (2003) states that, since online course delivery takes instruction beyond the walls of the classroom, learning becomes an all day activity. Consequently, instructors should ensure proper time management and plan for interacting with students online at any time of the day. In a course of this nature, class sizes need to remain small (maximum of 15 students) if the instructor is to do an adequate job of balancing the roles of online instructors.

During the course offerings, the instructor kept track of some of "lessons learned" and incorporated a checklist of strategies to enhance the learning process (see Figure 1), which were implemented during the third course offering. During that time, correspondence from students regarding medium of instruction and course content was very favourable. Students commented that they appreciated the flexibility associated with the course and many spoke positively of the online discussions and "chat groups." One student wrote, "I appreciated the time [online discussions] gave me to reflect and respond, I truly did enjoy the experience." Another student wrote, "When you chat online, you don't have to worry about looking dumb, I just figured I would ask my question, or give my answer, silly or not." In comparing online

discussions to face-to-face discussions, one student commented, "It certainly is a more balanced chat as everyone contributes feedback on pretty well all issues." The instructor also came away from the course feeling positive about the amount of learning and interaction that had taken place.

Comparison to other online course effectiveness studies

The current study found similar results to several recent studies on online course effectiveness and student satisfaction. Course satisfaction was similar to Buckingham (2003), who reported 89% student satisfaction in her online nursing course. However, students in this early intervention course expressed more course satisfaction than Johnson and Howell's (2004) report of a second year educational psychology online course. The present study differed from other studies in the area of attrition. Rose (2002) discussed the high attrition rates in online courses, but this was not evident in the current study, with only one student withdrawing from the course in the second offering and one student withdrawing in the third offering.

1. Build a sense of community among the learners
o Provide students with a list of emoticons to convey emotional content as part of their e-mail correspondence.
o Build in instructor presence and personality by posting e-mail messages on a regular basis and responding to e-mail messages promptly.
o Choose assignments that require student interactions.
2. Enhance learner-interface interaction
o Assign an activity that ensures students are accessing online materials prior to the start of the course.
o Update the FAQ section each term based on feedback from students.
o Provide links to useful resources (library catalogue, course administrator).
o Periodically check course materials on different platforms and browsers for presentation style.
3. Be aware of the impact of online learning process on students
o Provide "chat" guidelines (i.e., encourage students to log on once a day).
o Decrease procrastination by having students commit to assignments deadlines early in the course. Post weekly reminders regarding assignments and upcoming events.
o Decrease student anxiety regarding submitting assignments and receiving feedback by confirming receipt of assignments, providing estimated turn around times, and by providing samples of required assignments.

Figure 1.
Lessons Learned: Checklist of Strategies to Enhance the Learning Process.

Limitations of the Current Study

Although the current investigation demonstrated student satisfaction with the online course delivery, there are some methodological limitations that must be addressed. First, Merisotis and Phipps (1999) critiqued studies that looked at online course effectiveness, including the lack of random assignment as well as the reliability and validity of assessment instruments. This study did not employ random assignment because participants included all of the registered students in an undergraduate/graduate course. The study could have been strengthened by the use of a standardized satisfaction survey but, due to the unique nature of this course, none were considered appropriate.

Gender is an issue that deserves mention. In a study of 10 on-line graduate courses, Rovai and Barnum (2003) found that women learned more in online learning environments. In the current investigation, there were 37 females and 1 male participant so, perhaps, the findings should be interpreted with caution. The disproportionate number of females can be explained by the gender balance that is typical of classes in education at both the graduate and undergraduate level. This gender disparity was also evident in Johnson and Howell's (2004) study where 90% of the respondents were female. Further exploration of males' experiences of online learning would be beneficial.

It is important to note, however, that online course satisfaction studies are a new area of investigation. Methodological limitations are to be expected as we chart new territory and explore this new method of course delivery. Regardless of the aforementioned critiques, the present study demonstrates that online course delivery can be an effective way of teaching early intervention material and students report a high level of course satisfaction.

Conclusion

Developing an instructional course is an evolving process (Harrison & Bergen, 2000); as technology changes and instructors gain experience, online courses will be constantly adapted to enhance the learning

process. Overall the use of the Internet to teach family–centered practice in early intervention was a success. Yet, even with the experiences gained here, it is obvious that constant revision of course materials, introspection by instructors, and adoption of new technologies will be necessary to gain the most from this method of instruction. It is paramount to remember that the Internet should only be used to enhance teaching and learning and should not dominate course activities (Ali, 2003). Strong course content should always precede the medium of delivery. Nonetheless, distance education involving technology is a positive step towards meeting the needs of students seeking novel types of postsecondary educational opportunities and ensuring that all students receive quality instruction. Special education teachers and administrators are individuals in particular who have identified these needs, due to the increased demands placed on teachers. Ongoing professional development is essential to ensure that teachers, schools, and school systems continue to adapt and achieve the best outcomes for students (Government of Alberta, 2006b).

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